

18F-FDG ENT Scanning Protocol

UK

1. Introduction and Purpose

This document is to be used when performing an 18F-Fluorodeoxyglucose (FDG) scan, for the guidance of GenesisCare ARSAC certificate holders in support of the requirement for them to authorise PET/CT imaging protocols under the terms of their ARSAC Certificate.

2. Scope

The procedure laid out applies to the Radiographer in PET/CT and should be carried out when performing an ¹⁸F-FDG scan with guidance of ARSAC certificate holders.

3. Responsibilities & Training

The Radiographers working in PET/CT are responsible for performing the examination in accordance with guidance from the ARSAC certificate holder. Authorisation of GenesisCare PET/CT imaging protocols and associated factors is the responsibility of the ARSAC Certificate Holders.

All staff must be trained by an appropriate, qualified staff member to an agreed level of competency and have read and understood this procedure and any other relevant procedures and documentation before they are allowed to carry out the procedure (as per the competency framework document for radiographers).

4. Indications

- Head & Neck Cancer Staging and follow up

5. Contra-Indications

- Pregnancy
- Contrast Allergy
- Reduced renal function

6. Patient Preparation

The patient should receive an information leaflet together with the appointment letter to advise of waiting times, so they can plan appointments in the Centre accordingly.

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Non-diabetic patients should fast for 6 hours before their appointment as well as diabetic patients on Metformin or Glycoside. The appointment can be booked at the end of the morning to allow patients to have an early breakfast if needed.

Need a recent eGFR measurement (within the last 3 months).

A phone call is made on the day prior to the scan, to confirm attendance and all the instructions needed for the scan.

On the day of the scan:

1. On arrival patient needs to complete CT Contrast Safety Questionnaire & PET/CT Safety Questionnaire
2. Record the patient's height and weight.
3. Take the patient through to the preparation /uptake room.
4. Thoroughly explain procedure to the patient and complete the documentation.
5. If the patient is wearing clothing with any metallic fastenings, they should change into a patient gown. The patient should remove all jewellery.
6. Ensure the patient is comfortable and establish intravenous access using cannula.

NB:

- Ensure that the injection site is chosen carefully so as not to interfere with any area on the scan which may be critical.
 - In addition, in the case of breast cancer or any patient where the axillae and supra-clavicular areas are in question, inject in the contra-lateral side or the foot. Always observe the injection technique protocol.
 - Make sure don't have more than 2 attempts then seek assistance.
7. Once a cannula is inserted, perform a blood glucose measurement and keep the line patent by flushing with 10mls saline. The glucose measurement must be within parameters set out by the ARSAC holders' protocol.
 8. If eGFR is required, take a small sample of blood to enable measurement.
 9. The dose should be prepared and administered according to the above protocol.
 10. Make sure the patient is warm and comfortable and allow them to rest quietly for the uptake period. Patients may listen to music, read, watch TV & use mobile phones/gaming equipment.
 11. Patients are encouraged to keep well hydrated with water (unless contraindicated) and to empty bladder frequently.

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- 12. They may go to the toilet at anytime during the uptake time
- 13. The standard uptake period for 18F-FDG is 60 minutes.

7. Diagnostic Reference Levels

Adult Dose:

- Local DRL – 4MBq per kg +/- 10%
Maximum 400MBq
Minimum – 200MBQ
- ARSAC Limit – 400MBq

8. CT Scan parameters

Scan Range	kVp	Ref mAs	Slice width	Rotation	Pitch	Safire
Vertex to Upper Thigh	120	60	5@3mm	0.5 secs	0.95	3

- Local DRL – 318mGycm

9. PET Reconstruction Parameters

Series	Recon Method	Scatter Correction	Iterations	Subsets	Output image type
PET WB AC PSF	TrueX + TOF (UltraHD_PET)	Relative	2	21	Corrected
PET WB NAC	Iterative + TOF	None	3	21	Uncorrected
PET AC	Iterative + TOF	Relative	2	21	Corrected

10. Image Acquisition

- Scans are performed 60 minutes post injection.
- 4 minutes per bed position.
- Certain clinical indications may vary the uptake time.
- Contrast enhancement is performed during the CTAC
- 90mls Omnipaque 300 or Visipaque 320
- CT Scans are performed on a Portal-venous phase (60 secs delay)

11. Scan Preparation & Set Up

- Start getting patient ready 10 minutes before notional uptake time ends
- Patient must empty bladder prior to start
- Ensure patient is metal free so far as practicable
- Make sure couch is clean and fresh paper on the table
- Use CT head rest
- Identify patient prior to CT radiation exposure
- Lie patient supine, head first
- Make patient comfortable on table – pad under knees/blanket
- Scan with arms down
- Flush cannula with 10mls Saline prior to attaching the pump injector
- Immobilise arms using straps with hands resting on the pelvis
- Inform the patient there are no instructions for them to follow during the scan
- Tell patient they can speak and be heard over the intercom
- Remind patient not to move and the scan will take 30 minutes
- On leaving the scan room ensure door is closed and access restricted
- After administering the contrast media, disconnect the syringes from the pump and rest syringes on the patient's lap.
- Disconnect syringes from the patient's cannula at the end of the scan

12. Chemotherapy and Radiotherapy Protocol

12.1. Chemotherapy

There are 2 guidelines to follow when performing a PET-CT scan after chemotherapy.

1. If the referral is asking for an early treatment response, e.g. mid-therapy, then the advice is to delay until just before the next chemo is due before performing the PET-CT scan. (2 weeks as general rule but may be longer or shorter depending on the treatment cycle).
2. If the referral is asking for therapy response or signs of remission at the end of treatment, e.g. after all cycles have been administered, then the advice is to delay at least 3 weeks.

12.2. Radiotherapy

The accepted minimum delay between end of radiotherapy and PET-CT scan is 3 months. It is also acknowledged that a longer delay can be more beneficial, however in most cases a response to treatment is required therefore, the 3 months minimum is used.

In some instance a shorter delay may be accepted if the area of interest is not the area that has been treated, this will be discussed with the ARSAC holders on a case by case basis.

If the ARSAC certificate holder or delegated consultant specifies a date for the scan that is outside the guideline, then it will be booked for the indicated date.

The ARSAC holders are aware of an increase in the false positive and negatives rates.

13. Diabetic Protocol

A detailed description of the GenesisCare protocol is found in the GenesisCare diabetic procedure. The ARSAC holder has agreed that all patients (diabetic/non-diabetic) with a BSL up to 15mmol/L are able to proceed with the scan. Those with a BSL more than 15mmol/L will need to be rebooked once there BSL are under control.

14. Aftercare

- Check images before sending patient home
- Remove cannula if still in situ
- Give patient relevant instructions to follow after the scan
- If a patient wants to empty their bladder before leaving, they must they use the 'Hot' toilet not the toilet at reception.

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Revision History

Version	Date Created	Created By	Description of change
1.0	November 2017	Governance Administrator	New Protocol
1.1	February 2018	AMS- RSCH Medical Physics	Amended as requested by ARSAC holder and Head of Quality
2.0	November 2018	PET-CT Service Lead	Annual review and added to new branding template
2.1	April 2019	PET-CT Service Lead	Document reviewed and updated
2.2	June 2020	PET-CT Service Lead	Document reviewed and updated
2.3	June 2021	PET-CT Service Lead	Document reviewed and updated